Higher Education Quality Council of Ontario

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An Overview of SRDC's Cost–Benefit Analysis of Postsecondary Non-completion in Ontario

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HEQCO and the Social Research and Demonstration Corporation (SRDC) have been working together to understand the issue of postsecondary education (PSE) non-completion (i.e., starting postsecondary education and leaving without a credential) in Ontario. Our previous work found that roughly a quarter of Ontario postsecondary students do not earn a credential within seven years of starting their studies (Chatoor & Tishcoff, 2024; Colyar et al., 2023). There are important implications for these learners, as non-completers tend to earn less in the labour market than completers (Colyar et al., 2023). Our work also raised questions about the costs of non-completion for students, institutions, government and society. This brief provides an overview of SRDC's cost–benefit analysis (CBA) used to extend our understanding of non-completion in Ontario. Findings from this analysis are available in a blog [LINK] and summary infographic [LINK]. SRDC's full methodology report [LINK] provides detail regarding the approach and data sources used in their analysis.

CBA is a systematic approach to assessing the attractiveness of a project, investment or action. It is often used by governments to assess public spending decisions (e.g., policies and programs), but it can be used to evaluate any set of options. CBA works to evaluate multiple options by first establishing a benchmark with which to compare alternatives. Impacts are then catalogued and converted into monetary terms to measure the estimated costs of a given scenario against its estimated benefits.

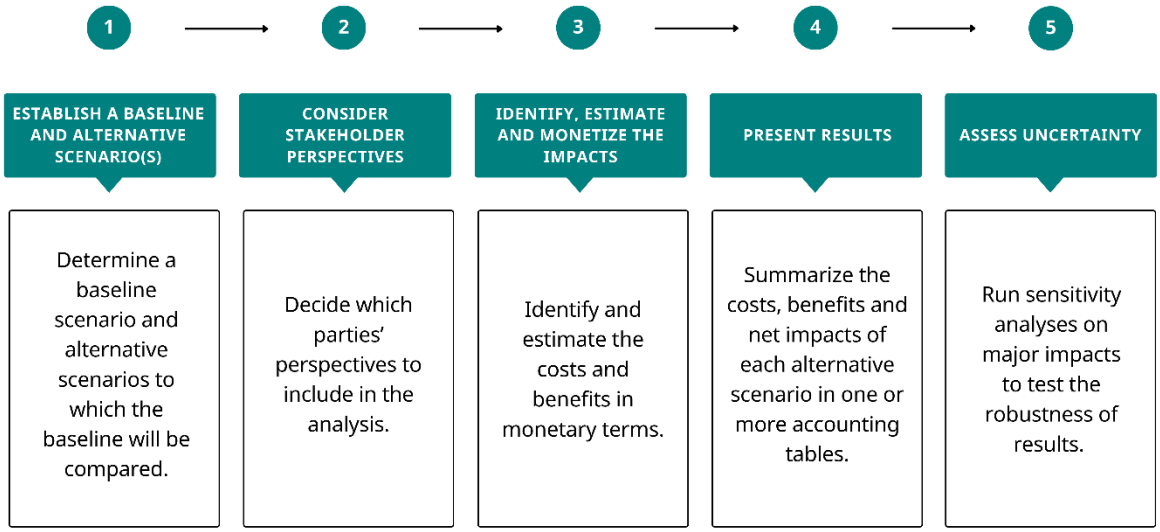
A Cost–Benefit Framework for Non-completion

SRDC adopted a cost–benefit analysis approach that measured the net costs of PSE non-completion in Ontario for students, institutions, government and society as a whole. "Net costs" are estimates of the costs of a given activity minus their estimated benefits. In the case of non-completion, net costs are a concern when they are positive (i.e., when the PSE costs exceed its benefits).

A standard CBA consists of five steps (Treasury Board of Canada, 2007; 2022; 2025) (Figure 1). There are, however, many ways to conduct a CBA, and the right approach often depends on the subject.

Figure 1

Cost–Benefit Analysis Structure



Note: This figure outlines the five standard steps of a cost–benefit analysis, adapted from the Canadian Cost-Benefit Analysis Guide for Regulatory Proposals (Treasury Board of Canada, 2007; 2022; 2025).

Baseline and Alternative Scenario(s)

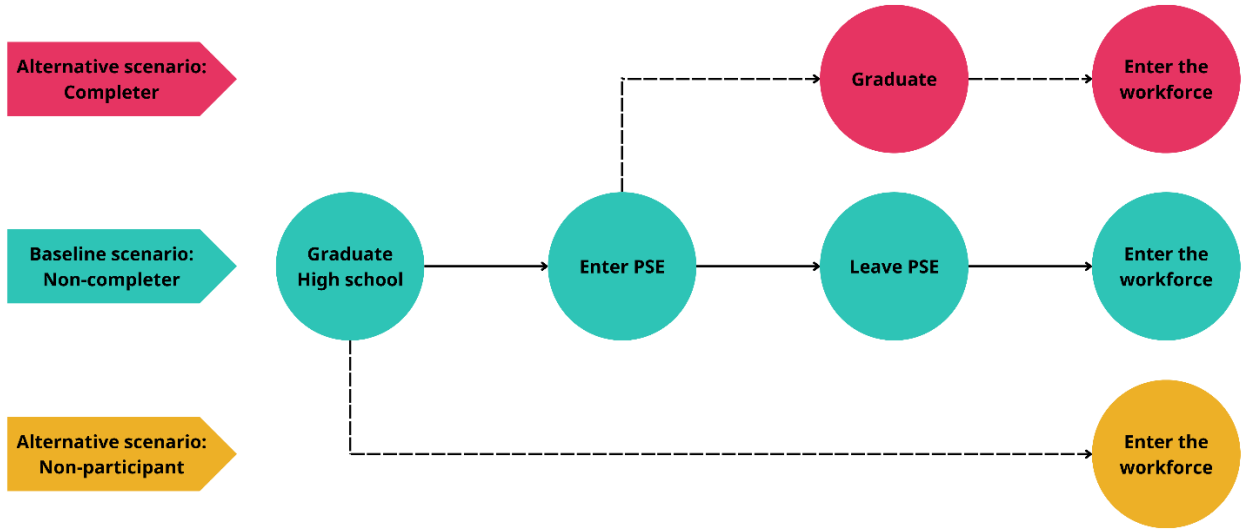
The baseline is the expected result of a CBA if there is no change to the status quo. For SRDC's CBA, the baseline scenario is someone who enrolls in PSE and does not complete a credential; more specifically, it is a person who starts an undergraduate, certificate or diploma program at an Ontario college or university and does not graduate from any form of PSE in Canada within the following seven years. We refer to this individual as a non-completer throughout this brief.

An alternative scenario is the expected result of a different course of action for the baseline scenario. SRDC's non-completion CBA includes two alternative scenarios: completing PSE and not participating in PSE at all. In other words, what would happen if the average non-completer completes PSE, and what would happen if the average non-completer never participated in PSE? Figure 2 provides a visual representation of these alternative scenarios in relation to the baseline. The alternative scenarios allow SRDC to estimate the hypothetical costs and benefits that non-completers would have

experienced had they achieved a different outcome. Their CBA presents an estimate of the differences between these scenarios to determine the net costs of non-completion.

Figure 2

Baseline and Alternative Scenarios



Note: This figure outlines the educational pathways followed by non-completers (the baseline) and completers and non-participants (the alternative scenarios). Each of the alternative scenarios represent pathways that a non-completer could have taken. It is important to note that each pathway has its own timeline, and we do not assume that participants would enter the workforce at the same time in all scenarios.

SRDC's CBA estimates the costs of the baseline and alternative scenarios at an individual level; that is, the analysis offers the average net impact of an individual non-completer's course of action. When converting costs and benefits into monetary terms, it is impossible to calculate the exact amounts for every person impacted. SRDC's analysis provides an estimate of per-student costs and benefits based on the average non-completing student. Students who face barriers accessing PSE and have lower completion rates and earnings may have different costs and benefits than the average. While we caution this analysis does not represent all students, the results nonetheless provide important information for PSE stakeholders.

Stakeholder Perspectives

Table 1 summarizes the stakeholder perspectives included in SRDC's CBA.

Table 1

Non-completion CBA Stakeholders

Stakeholders	Description
Students	Ontarians who participated in an undergraduate, certificate or diploma program at a college or university in the province
Institutions	Publicly assisted Ontario colleges and universities
Government	Provincial and federal governments
Society[1]	Ontarians who participated in PSE and those who did not, as well as provincial and federal governments

Identifying, Estimating and Monetizing the Costs and Benefits

Costs can include direct monetary costs, like tuition, and indirect costs, like forgone earnings while studying. Benefits can include direct and indirect monetary benefits, like increased earnings later in life (direct) and health benefits associated with higher incomes (indirect). It is important to consider costs and benefits by stakeholder group because a benefit from one group's perspective may represent a cost from another. In a policy context, for example, if one group receives all the benefits at the cost of other groups, the course of action may be cost-effective but not equitable.[2]

To make informed estimates of costs and benefits, SRDC drew from data sources with information about Ontarians' earnings in connection with their postsecondary experiences, and information about the costs associated with education. Data sources included the Ontario Student Assistance Program (OSAP), Postsecondary Student Information System (PSIS), the Education and Labour Market Longitudinal Platform (ELMLP) and the Canadian Census. SRDC also gathered information about government funding to postsecondary institutions from the Financial Information of

[1] Benefits and costs to institutions are not included in the summation of impacts to society.
[2] A CBA can sometimes go a step further and consider subjective judgements about fairness; this was outside the scope of the study, however, so every dollar is treated the same, no matter who receives it.

Universities and Colleges publication (CAUBO, 2023) and about taxes and social assistance payments from the Canadian Tax and Credit Simulator (CTaCS) and the Social Policy Simulation Database and Model (SPSD/M).

The following is a list of parameters and assumptions SRDC used while estimating costs and benefits by stakeholder group.

- **Sample with 2013 start year**: Based on data availability, the base sample for this exercise consisted of full-time students who entered PSE in 2013. SRDC identified groups of completers and non-completers in PSIS by drawing on student demographic, program and enrolment information as well as completion status. Those who had a PSIS graduation record by December 2019 were considered completers. Those without the graduation flag by the same year were considered non-completers. International students and graduate students were excluded from the sample.[3]

- **40-year time horizon (up to age 60)**: Choosing a 'cut-off' for estimating costs and benefits is complicated. While education has lifelong benefits, it is difficult to find data sources that cover an individual's entire life. We chose a 40-year maximum time horizon, up to age 60, which we assume should cover graduates' prime working years.[4] For example, if a student was 40 years old when they started PSE in 2013, SRDC estimated costs and benefits over a 20-year horizon for them; if they were 20 years old in 2013, SRDC did this with a 40-year horizon.[5]

- **2021 constant dollars and 7% discount rate**: Estimates are costed in constant 2021 dollars.[6] Aligned with the Treasury Board of Canada's guides (2007; 2022;

[3] International students were excluded from the sample of non-participants due to incomplete information about labour market outcomes for those who leave Canada. Graduate students were excluded because they study for longer periods at an older age and enter the labour market with different work and study experience compared to other types of credential holders. These exclusions helped simplify data and analysis needs as well as create comparable samples of completers, non-completers and non-participants.
[4] Benefits and costs into retirement are ignored, which may understate the benefit of PSE.
[5] To project future earnings up to age 60, SRDC constructed age–education–earnings profiles using propensity score matching across five age categories: 26–33, 34–41, 42–49, 50–57 and 58–65 years. They assumed that the future productivity of current non-completers would resemble that of present workers in similar age–education groups. For more information about this approach, see SRDC's report.
[6] The term "constant dollars" describes "income after adjustment for inflation" (United States Census

2025), future values are discounted using a 7% discount rate. A discount rate helps to reflect the present value of money gained or lost in the future, recognizing that people tend to value money earned today more than money they might earn, say, a year from now.

- **Full-time courseload of 60%**: The CBA had to make an assumption about the amount of time postsecondary students in the sample spent in their courses (e.g., to estimate the opportunity cost of studying). Although the sample was limited to full-time students, we cannot assume each of those students had a full (i.e., 100%) courseload. SRDC used the OSAP definition of full-time enrolment, which is 60% or more of a full courseload for all calculations related to time spent in PSE. Using 60% instead of 100% did not significantly impact the final result, which is reported as a difference. SRDC also conducted a sensitivity analysis using the assumption of a 100% courseload; details about this analysis can be found in the section *Assessing Uncertainty with Sensitivity Analysis* and in SRDC's full technical report (linked here).

- **Focus on tangible costs and benefits**: The CBA estimates costs and benefits for which high-quality data and robust estimations were available. Intangible costs and benefits often associated with postsecondary participation are not reflected in the estimations because these benefits are hard to quantify or monetize and data are not available.[7] The cost categories included in the analysis are described below.

With these parameters, SRDC estimated the costs incurred, by stakeholder group, as a result of a non-completer's course of action. SRDC considered these costs alongside those incurred for completers and non-participants who possessed characteristics similar to non-completers (i.e., by using analytical techniques to locate completers and non-participants who resemble non-completers in all ways except for their postsecondary outcomes).

Bureau, 2024).

[7] Intangible benefits, for example, might include health benefits and criminal justice outcomes deriving from differences in educational participation.

Tuition and Compulsory Fees

To estimate the average tuition paid by non-completers and completers, SRDC identified an average annual tuition cost and average amount of time in school for completers and non-completers.

SRDC first created a time-in-PSE measure[8] and then used linear regression to estimate the average time-in-PSE for completers and non-completers.[9] Factoring in the 60% full-time enrolment adjustment described above, SRDC estimated the average non-completer spends 1.88 years and the average completer spends 2.1 years in PSE. The net difference is 0.22 years.

SRDC then produced weighted estimates of average annual tuition costs using OSAP data.[10] SRDC estimated non-completers pay $10,427 and completers pay $11,633 in tuition and compulsory fees. The net difference between the two groups was $1,206.

Other Educational Expenditures

Aside from tuition, students incur other educational costs like equipment, textbooks, computers and other supplies. To calculate these costs, SRDC used the time-in-PSE estimates described above and a weighted estimate of annual average costs derived

[8] This measure is distinct from and less straightforward than using the anticipated completion time for a full-time program (i.e., four years for a bachelor's degree, two years for a diploma and one year for a certificate) and time to completion (i.e., how many years later a student graduated). SRDC used a time-in-PSE measure to avoid assuming non-completers would have spent the same time in PSE as completers.
[9] See SRDC's methodological report for full details. SRDC observed, in PSIS, whether each member of the 2013 cohort attended PSE in the seven years following (i.e., from 2014 to 2019) and created a time-in-PSE value for each individual in the cohort. Using linear regression, we estimated the effect of being a completer on time-in-PSE, controlling for covariates (credential type, age, immigration status, gender and field of study). The regression results provide the difference in time-in-PSE for completers and non-completers, which is 0.36 years. Using the same regression results, SRDC then found the average time-in-PSE for non-completers was 3.14 years. The same methodology was used for the average time-in-PSE for the equivalent completer, with the difference in time-in-PSE (i.e., 0.36) added to produce an estimate of 3.5 years.
[10] OSAP data provided full-time equivalent domestic tuition and compulsory fees covering 2013 to 2019 by institution, level of study and program. To produce a weighted estimate of the average yearly tuition and other compulsory costs, SRDC matched PSIS enrolment data with tuition and fees data from OSAP, weighted by institution, credential and field of study. Weighted tuition and costs were then adjusted to 2021 dollars and averaged across 7 years before being combined to the time-in-PSE estimates.

from OSAP data.[11] SRDC estimated non-completers pay $2,026 and completers pay $2,260 in non-tuition educational costs, resulting in a net difference of $234.

Prime-working-life Earnings

Estimating the effect of education on earnings (i.e., the "returns to education") is complicated; it is essentially an attempt to separate the effect of earning a credential from the effect of spending time in a learning environment where knowledge and skills are developed. Previous work on this topic provided useful information to guide the analysis (OECD, 2018; Psacharopoulos & Patrinos, 2018).

For these estimates, SRDC used the 2001 Census[12] — the last census to sufficiently distinguish between completers, non-completers and non-participants — to observe short-term earnings (up to age 25)[13] and project future earnings (up to age 60).[14] Someone who does not participate in PSE may have different characteristics from someone who does, just as someone who completes may differ from someone who leaves PSE without a credential. To adjust for some of these potential differences in characteristics and avoid bias in the results, SRDC used a technique called propensity score matching.[15] This technique allowed SRDC to match non-completers with comparable non-participants and completers and helped ensure the estimated outcomes were related to the course of action taken rather than underlying differences in the groups.[16] This involved using a regression analysis to estimate the probability of

[11] To produce a weighted estimate of non-tuition educational costs, SRDC matched PSIS enrolment data with OSAP cost data. Weighted educational costs were then adjusted to 2021 dollars and averaged across 7 years before being combined with the time-in-PSE estimates.
[12] The 2001 Census sample is slightly older than the 2013 PSIS cohort, so SRDC re-weighted the data based on the proportions in each age group to adjust for age differences.
[13] SRDC also used PSIS-T1FF to estimate short-term earnings of the 2013 cohort. For more information, see SRDC's report.
[14] Estimates did not account for pensions because this data does not sufficiently differentiate between non-participants, non-completers and completers.
[15] Propensity score matching (PSM) is a technique that attempts to control for bias in observational studies by creating comparable treatment and control groups. A propensity score is the probability of a participant being assigned to the treatment group based on their observed characteristics. Each participant is assigned a propensity score and then matched one-to-one with a participant with a similar score (Austin, 2011). If a sample is successfully matched into pairs, PSM provides two groups with a similar distribution of characteristics.
[16] SRDC specifically used the nearest-neighbour approach (i.e., matching each treated individual with the closest control individual) to estimate the effect of non-completion on earnings. For more information about this technique, see SRDC's report.

non-completion, controlling for age,[17] marital status,[18] gender, first official language spoken and visible minority status.

SRDC estimated a difference in lifetime earnings (up to age 60) of $401,907 between non-participants and non-completers, and $1,028,358 between non-participants and completers, resulting in a net difference of $626,451.[19]

Forgone Earnings

SRDC also considered the earnings that a student forgoes when they attend PSE. How much would they have earned if they worked instead of studied during those years? To estimate the forgone earnings of completers and non-completers, SRDC referred to earnings of non-participants recorded in the 2001 Census[20] combined with the time-in-PSE variable. SRDC estimated non-completers forgo $51,529 and completers forgo $59,615 while studying, a difference of $8,086.

Taxes and Social Programs

SRDC used the prime-working-life earnings estimates and CTaCS to estimate the personal income taxes individuals in each group pay, as well as the contributions they make to Employment Insurance (EI) and the Canada Pension Plan (CPP).[21]

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[17] Due to sample size constraints, it was not feasible to estimate earnings by individual year of age. Instead, SRDC used age groups. For short-term earnings, the 18- to 27-year age group was used. For projected future earnings (up to age 60), SRDC constructed age–education–earnings profiles using PSM across age categories: 26–33, 34–41, 42–49, 50–57 and 58–65 years.

[18] SRDC acknowledges that marital status could be potentially endogenous to earnings.

[19] SRDC estimates are based on the assumption that future productivity of current non-completers will resemble that of present workers in similar age–education groups.

[20] The sample of non-participants was significantly older than the 2013 cohort of non-completers, implying more work experience and likely an overestimation of forgone earnings based on their average annual employment earnings. To adjust the difference in age profile, their average employment earnings in 2000 were calculated by each year of age from 18 to 50, and the results were then weighted by the age distribution among non-completers within the 2013 cohort.

[21] CTaCS is a software package that simulates the Canadian personal income tax system, using inputs like tax year, earnings and province (Canada Social Report, n.d.). It simulates provincial and federal taxes up to the year 2019. For tax years after 2019, SRDC assume the 2019 tax structure. Another assumption SRDC made is in the profile of the simulated individuals: they used the default settings, which assume that simulated individuals are single with no dependents, whose only source of income is their earnings and who have no eligible tax deductions (e.g., donations, union dues, etc.).

SRDC estimated a difference in lifetime provincial and federal taxes of $118,695 between non-completers and non-participants and $309,169 between completers and non-participants, resulting in a net difference of $190,474.

For lifetime EI and CPP contributions, SRDC estimated a difference of $6,044 between non-completers and non-participants, and $10,906 between completers and non-participants. This resulted in a net difference of $4,862.

EI and Social Assistance Payout

SRDC used Statistics Canada's SPSD/M[22] to estimate EI and provincial social assistance paid to individuals by age and educational level.[23] The estimated difference in lifetime EI and social assistance was $15,012 between non-completers and non-participants, and $57,260 between completers and non-participants, resulting in a net difference of $42,248.

Direct Government Funding to Institutions

SRDC drew from the Financial Information of Universities and Colleges to estimate per-student college and university funding from the provincial and federal governments.[24] Average funding estimates for all institutions were calculated and divided by a weighted enrolment count.[25]

SRDC estimated that government transfers average $14,356 per non-completer and $16,018 per completer, resulting in a net difference of $1,661.

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[22] The SPSD/M is a synthetic dataset that is representative of the Canadian population. The model only allows for analysis up to 2028, so years after 2028 were assumed to adopt the same 2028 structure.
[23] The SPSD/M does not distinguish between individuals with no PSE (i.e., non-participants) and some PSE (i.e., non-completers). To estimate the amount for non-participants, SRDC created a multiplier based on the percentage difference in earnings between non-completers and non-participants to gauge how payouts might differ between both groups. The rationale was that lower lifetime earnings are the primary reason non-participants receive more in assistance over their lifetimes.
[24] While the most accurate measure of per-student government funding would be provincial government grants (wherein federal transfers are included), that data is only available for the college sector. Instead, SRDC used total provincial and federal revenues for operations, which was the best estimate covering both universities and colleges.
[25] Enrolment count was weighted using publicly available enrolment data. These data included full-time and part-time domestic numbers by institution type and year. Full-time and half of part-time enrolments were combined to produce a full-time equivalent (FTE) estimate. The result was averaged across 7 years before being multiplied by the time-in-PSE estimates.

Government Financial Aid to Students

To estimate financial aid received by completers and non-completers, SRDC requested data from OSAP on the number of students entering PSE in Ontario in 2013 who received provincial or federal financial aid, as well as the average amounts of these aids by institution type and level of study. These data were used to calculate the average amount of financial aid received per student annually,[26] namely, $3,350 for provincial grants and $2,589 for federal grants.[27] With these calculations and the time-in-PSE variable,[28] SRDC estimated that non-completers received $12,094 of provincial aid and $9,347 of federal aid (for a total of $21,441); completers received $13,418 of provincial aid and $10,370 of federal aid (for a total of $23,788).

Administration Costs

Finally, SRDC estimated the cost of providing administrative and academic supports and services to students.[29] Using institutional operational expenditures as reported in the Financial Information of Universities and Colleges, SRDC created a per-student weighted average of institutional administrative costs, combined with the time-in-PSE variable.[30]

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[26] SRDC estimated the total amount of financial aid received by the 2013 entrant cohort in 2013-14 and divided this amount by the number of students in the 2013 entry cohort. It is important to note that the data provided by OSAP span eight academic years, starting from the 2013-14 academic year. The average annual amount of financial aid received by the students is similar between the 2013-14 to 2016-17 academic years. For the sake of simplicity, while affecting the results little, SRDC used the average value based on the 2013-14 academic year to represent a typical amount of financial aid received by students each year.

[27] According to the 2020 report by Ontario Auditor General, prior to the major changes to OSAP in the 2017-18 academic year, grant recipients who withdrew from their studies were not required to repay their grants. Given the time-in-PSE estimate SRDC used, they adopted the assumption that non-completers in the 2013 cohort were unaffected by grant-to-loan conversion because they had generally left PSE before this change took place.

[28] Estimates were discounted at 7% over 8 years and adjusted to 2021 dollars.

[29] Ideally, service usage would also be considered, but it is not tracked or differentiated between student groups in a systematic way. For that reason, and due to limited data available across both the college and university sectors, the analysis relied on total operational expenditures despite that much of those costs do not go towards directly offering student services.

[30] To produce a weighted estimate of postsecondary institution per-student operational expenditures, we relied on the total expenditure within the general operation funds and publicly available enrolment data. We extracted full-time and part-time domestic enrolment numbers by institution type and year. To produce a full-time equivalent estimate, all full-time enrollees and half of part-time enrollees were combined.

SRDC estimated that postsecondary institutions spent an average of $35,136 per non-completer and $39,201 per completer, resulting in a difference of $4,065.

Results of Non-completion CBA

The CBA reveals there are significant societal benefits when Ontarians participate in PSE, and those benefits grow if students complete their studies. Table 2 summarizes the net impacts from a societal perspective. Compared to not participating, if a non-completer were to complete PSE, society would benefit by almost $1 million. When a student does not complete their studies, society still benefits relative to a non-participation scenario, but much less so; relative to a completion scenario, postsecondary non-completion costs society about $600,000 per student in 2021 constant dollars.

Table 2

Costs and Benefits to Society

Costs and benefits to society	Impact of not completing relative to not participating	Impact of completing relative to not participating	Net impact of not completing relative to completing
Prime-working-life earnings	$401,907	$1,028,358	$626,451
Tuition and compulsory fees	-$10,427	-$11,633	$1,206
Other educational expenditures	-$2,026	-$2,260	$234
Government direct funding to institutions	-$14,356	-$16,018	$1,661
Forgone earnings	-$51,529	-$59,615	$8,086
Net impact	**$323,569**	**$938,832**	**-$615,263**

Note: Due to rounding, certain totals may not sum exactly.

Tables 3, 4 and 5 break down the net impacts by stakeholder group.

Students incur costs in the form of tuition and other educational expenditures, as well as opportunity costs, but these are more than offset by long-term benefits in the form of earnings. Earnings from completion are more substantial than for non-completion. Much like it costs society, non-completion costs individual students roughly $380,000.

Table 3

Costs and Benefits to Participants

Costs and benefits to participants	Impact of not completing relative to not participating	Impact of completing relative to not participating	Net impact of not completing relative to completing
Prime-working-life earnings	$401,907	$1,028,358	-$626,451
Government financial aid to students	$21,441	$23,788	-$2,347
Tuition and compulsory fees	-$10,427	-$11,633	$1,206
Other educational expenditures	-$2,026	-$2,260	$234
Provincial and federal taxes	-$118,695	-$309,169	$190,474
EI premium and CPP contribution	-$6,044	-$10,906	$4,862
EI and social assistance payout	-$15,012	-$57,260	$42,248
Forgone earnings	-$51,529	-$59,615	$8,086
Net impact	**$219,615**	**$601,304**	**-$381,688**

Note: Due to rounding, certain totals may not sum exactly.

Non-completion costs governments in the form of lost tax revenues. When we consider that 24.7% of students do not complete within seven years (Colyar et al., 2023), the aggregate cost of non-completion to government is substantial. Put differently,

investments that support student success and graduation stand to offer substantial returns to government (and society).

Table 4

Costs and Benefits to Provincial and Federal Governments

Costs and benefits to governments	Impact of not completing relative to not participating	Impact of completing relative to not participating	Net impact of not completing relative to completing
Provincial and federal taxes	$118,695	$309,169	-$190,474
EI and social assistance payout	$15,012	$57,260	-$42,248
EI premium and CPP contribution	$6,044	$10,906	-$4,862
Government direct funding to institutions	-$14,357	-$16,017	$1,661
Government financial aid to students	-$21,441	-$23,788	$2,347
Net impact	**$103,953**	**$337,530**	**-$233,756**

Note: Due to rounding, certain totals may not sum exactly.

Postsecondary institutions incur administrative costs in both completion and non-completion scenarios. This suggests institutions spend more on education and service delivery than they receive in tuition and government funding. The costs are reduced slightly when a student does not complete.

Table 5

Costs and Benefits to Institutions

Costs and benefits to institutions	Impact of not completing relative to not participating	Impact of completing relative to not participating	Net impact of not completing relative to completing
Tuition and compulsory fees	$10,427	$11,633	-$1,206
Government direct funding to institutions	$14,356	$16,018	-$1,661
Administration costs	-$35,136	-$39,201	$4,065
Net impact	**-$10,353**	**-$11,551**	**$1,198**

Note: Due to rounding, certain totals may not sum exactly.

Assessing Uncertainty with Sensitivity Analysis[31]

In a CBA, a sensitivity analysis tests uncertainty by assessing how changes in assumptions, parameters or data inputs affect the results; if results are consistent, this type of test can strengthen the reliability of the CBA's results (Jain et al., 2012). Using alternative data, SRDC conducted sensitivity analyses to test the robustness of the larger category estimates, specifically prime-working-life and forgone earnings.

For prime-working-life earnings (specifically short-term earnings), SRDC explored potential differences in skills and abilities between non-participants, non-completers and completers using available standardized test data.[32] While the estimates indicated potential differences in skill and/or ability, SRDC did not have a large enough sample to factor these differences into the main analysis. SRDC also created comparative benchmarks for evaluating the primary estimates from the 2001 Census.[33]

[31] To learn more about the sensitivity analyses that were conducted, please contact SRDC.
[32] SRDC accessed test scores information from the Programme for the International Assessment of Adult Competencies in the Longitudinal and International Study of Adults (LISA).
[33] SRDC combined the 1991 Census with the Longitudinal Worker File (1991–2021) to estimate cumulative earnings over time for different education levels. Regarding short-term earnings, the

For forgone earnings, the sensitivity analysis explored differences in characteristics of non-participants and non-completers that could affect earnings. The goal was to ensure that estimates reflect the course of action taken rather than underlying differences between groups. To account for some of these differences, SRDC used a propensity-score-based method to estimate hypothetical annual employment earnings had non-completers not participated in PSE.[34] The result was similar to the value obtained in the main analysis.

SRDC also calculated the annual earnings of non-completers immediately after leaving PSE using tax data linked to PSIS as an alternative measure of annual forgone earnings. While this approach yielded higher estimates for forgone earnings, the difference was not large enough to change the main findings from the analysis.

For both short-term earnings and forgone earnings, SRDC conducted a sensitivity analysis that merged the full PSIS sample with Ontario high school records data and found that controlling for high school achievement did not substantively alter the estimates for the sub-sample of high school students for whom data was available.[35]

Lastly, SRDC used sensitivity analysis to check the decision to define a full-time courseload as 60% and explored whether using a 100% courseload would change the result. Under this analysis, the benefit to society was slightly lower and the cost to institutions was slightly higher when comparing non-completers to non-participants. The overall result, however, was the same: non-completion was more valuable than non-participation, and completion was more valuable than non-completion.

This brief provides an overview of SRDC's methodology. The full details are available in SRDC's report, which you can access here. The results of their analysis offer important

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difference in estimates was small and potentially unreliable due to the small sample size in the LISA. For long-term earnings, the average cumulative earnings for each group (completers, non-completers and non-participants) were comparable to the average cumulative earnings found in the 2001 Census.

[34] The age profile of PSE non-completers in the 2001 Census was substantially older than for PSE entrants in Ontario. Estimating counterfactual earnings for each year of age by a propensity-score-based method was, however, not practicable due to sample size issues. Instead, SRDC applied a propensity-score-based method among individuals aged 18–22, which accounted for nearly 80% of the non-completers.

[35] The sub-sample, however, differs considerably from the full PSIS sample, and equivalent models comparing the full and the sub-sample show that the estimates are affected by sample difference. This suggests there are subgroup variations in estimates, which are beyond the scope of this study on average effects but may be an area of future research.

information regarding non-completion in Ontario. HEQCO's previous work with SRDC examined non-completion rates in Ontario and the earnings outcomes for students who began but did not complete a credential. SRDC's CBA offers a broader exploration of non-completion costs and benefits for students, governments, institutions and society and provides a more complete portrait of the value of PSE.

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